

REMARKS

The Office Action has been carefully reviewed. Reconsideration and allowance of the claims in light of the foregoing amendments is respectfully requested. A petition and fee for a three-month extension of time is submitted herewith.

Claims 8, 9, and 14 stand rejected under 35 U.S.C. 102(a) as being clearly anticipated by Chiarelli et al., the article entitled Polyelectrolyte Spin-Assembly, cited in the IDS filed on June 20, 2005. The Office Action stated that Chiarelli et al. disclose a method of forming a multilayered thin film heterostructure comprising alternating layers of polyanionic and polycationic layers which are spin coated onto a substrate. After each polyionic layer is spin-assembled onto the substrate, the substrate is heated or exposed to a vacuum for a sufficient time to effect drying of the coated layer, see the section of the article entitled "Experimental Method".

Claim 14 recites the same method of forming a multilayered thin film heterostructure as claims 8 and 9; hence the limitations of claim 14 are met by a prior art reference which teaches a polycationic layer/polyanionic layer structure. The claim does not require one of the bilayers to be an uncharged polymer species.

Applicants submit that claims 8, 9 and 14 have been amended to clarify that one of the coating layers of the bilayer is an uncharged polymer species. As noted by the Office Action, the claims had not required one of the bilayers to be an uncharged polymer species. The Chiarelli et al., reference entitled Polyelectrolyte Spin-Assembly did not teach or suggest one of the layers being an uncharged polymer species. Accordingly, in view of the present amendments, claims 8, 9 and 14 are submitted to be novel and non-obvious.

Claim 14 stands rejected under 35 U.S.C. 102(e) as being clearly anticipated by Qiu et al., US 2004/0018295, of record. The Office Action stated that Qiu et al. disclose a method of forming a multiplayer thin film heterostructure in which one or more layers of polyanionic and polycationic polymer layers are spin coated onto a substrate. Following the deposition of one ionic polymer, the coated substrate material is dried before the deposition of the next ionic polymer layer having opposite charges, see paragraphs [0179], [0184], [0186].

Claim 14 recites the same method of forming a multilayered thin film heterostructure as claims 8 and 9; hence the limitations of claim 14 are met by a prior art reference which teaches a polycationic layer/polyanionic layer structure. The claim does not require one of the bilayers to be an uncharged polymer species.

Applicants submit that claim 14 has been amended to clarify that one of the coating layers of the bilayer is an uncharged polymer species. As noted by the Office Action, the claims had not required one of the bilayers to be an uncharged polymer species. Qiu et al. do not teach or suggest one of the layers being an uncharged polymer species. Accordingly, in view of the present amendments, claim 14 is submitted to be novel and non-obvious.

Claim 14, 16 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Qiu et al., US 2004/0018295, of record, or Chiarelli et al., the article entitled Polyelectrolyte Spin-Assembly, cited in the IDS filed on June 20, 2005, further in view of Laguitton, U.S. Patent 6,689,478, newly cited. The Office Action stated that Qiu et al. disclose a method of forming a multilayer thin film heterostructure in which one or more layers of polyanionic and polycationic polymer layers are spin coated onto a substrate. Following the deposition of one ionic polymer, the coated substrate material is dried before the deposition of the next ionic polymer layer having opposite charges, see paragraphs [0179], [0184], [0186].

Chiarelli et al. disclose a method of forming a multilayered thin film heterostructure comprising alternating layers of polyanionic and polycationic layers which are spin coated onto a substrate. After each polyionic layer is spin-assembled onto the substrate, the substrate is heated or exposed to a vacuum for a sufficient time to effect drying of the coated layer, see the section of the article entitled "Experimental Method".

Neither Qiu et al. or Chiarelli et al. disclose that at least one polymer includes a chromophore. However, Laguitton discloses that biological or synthetic molecules, for example, chromophores, can be attached to an outermost polyelectrolyte layer in a multilayered thin film heterostructure, see column 6, lines 16-37. It would have been obvious to one skilled in the art, in view of the teaching of Laguitton, that a chromophore could be attached to the uppermost polyionic layer formed in the known methods of either Qiu et al. or Chiarelli et al. in order to provide color to the organic layer.

Applicants submit that claim 14 has been amended to clarify that one of the coating layers of the bilayer is an uncharged polymer species. As noted by the Office Action, the claims had not required one of the bilayers to be an uncharged polymer species. Qiu et al. do not teach or suggest one of the layers being an uncharged polymer species. Accordingly, in view of the present amendments, claim 14 is submitted to be novel and non-obvious. Additionally, claim 16 has been amended to clarify that the chromophore "is in a layer under the topmost layer" of the multilayer thin film heterostructure. Support for this amendment can be found in the specification at page 11 in examples 5-7 wherein the PAZO layer is not the topmost layer. At page 4, lines 20-21 PAZO is identified as a chromophore-containing polymer. As Laguitton suggests only that, e.g., chromophores can be attached to an outermost polyelectrolyte layer and does not suggest such chromophores in any other layer of the multilayer thin film heterostructure, claim 16 as amended is submitted to be non-obvious. As claim 17 is dependent upon claim 16, it is also therefore non-obvious.

Claims 6, 14, 15, and 18 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action stated that Claim 14 recites the same method of forming a multilayered thin film heterostructure as claim 14 are met by a prior art reference which teaches a polycationic layer/polyanionic layer structure. The claim does not require one of the bilayers to be an uncharged polymer species. However, the claim recites that the uncharged polymer species is selected from the group consisting of poly(vinylpyrrolidinone), polysaccharides, and biopolymers. It is suggested that claim 14 be amended to recite that one of the polymer layers is an uncharged polymer layer. For example, in line 13 of claim 14, after "up upon said substrate", --wherein one of the coating layers of said bilayer is an uncharged polymer species and...-- could be inserted.

Newly submitted claim 18, which depends from independent claim 9, recites that the plurality of layers includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure. However, claim 9 only recites the formation of a bilayer. Claim 6, which has been amended to depend from independent claim 8, also recites that the plurality of layers includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure. However, claim 8, like claim 9, only

recites the formation of a bilayer. Antecedence for "the plurality of layers" is found in claim 7, line 16. It is suggested that claims 8 and 9 be amended to include the repeating step recited in lines 14-17 of claim 7. The inclusion of this processing step in claims 8 and 9 would provide antecedence for "the plurality of layers".

Applicants have amended claims 6, 14, 15, and 18 either in the manner suggested by the Office Action or in a manner essentially equivalent to the suggestion. Accordingly, it is urged that the rejection of claims 6, 14, 15, and 18 stand rejected under 35 U.S.C. 112, second paragraph be withdrawn.

Claim 7 and 10-13 were indicated allowable over the prior art of record.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited Statutory Invention Registration, H2046 H, to Roberts et al. discloses a process for mass producing uniform multi-layer non-linear optical polymer thin polar films.

In view of the foregoing amendments and remarks, claims 6-18 are urged to be allowable over 35 U.S.C. 102, 103 and 112. If the Examiner believes there are any unresolved issues despite this amendment, the Examiner is urged to contact the applicants' attorney undersigned below for a telephonic interview to resolve any such issue. A favorable action is solicited.

Respectfully submitted,

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